Info Note

Creating opportunities for young coffee farmers in Honduras using climate services

Findings from on-line training in Participatory Integrated Climate Services for Agriculture (PICSA)

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Key messages

- Young leaders in their communities successfully acted as facilitators of PICSA implementation in a scalable process, working in a network with the relevant coffee stakeholders in a collaborative learning process.
- Young people can act as generators of change in their communities through digital inclusion which enables them to share local information to support coffee farmers' decision-making.
- The online PICSA training of young people in rural communities has considerable potential but requires additional facilitator skills and new approaches. It can also complement face-to-face activities and training.
- IHCAFE is interested in using PICSA as a climate service and as a system to support their coffee extension services.

This info note summarises the findings from the online PICSA training carried out from June 15 to 16 - 2020, 45 young people from coffee-growing families as agents of change within their communities, followed by the field implementation with coffee farmers from July - August 2020. The training was part of the CONECTA+ project led by the Secretary of Natural Resources and Environment - MiAmbiente+ and implemented with coffee growers by the Honduran Coffee Institute (IHCAFE) with the support of the Technological University of Honduras (UTH), who endorses teaching processes to university level.

PICSA was developed by the University of Reading within the framework of the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) and with initial support from Nuffield Africa. PICSA supports farmers in making their own plans and decisions, tailored to each farmer's own 'context' in their production systems, through a series of group and individual activities using participatory tools as described in Dorward et al. (2015).

Context – PICSA, Coffee and Climate

Typically, PICSA starts with face-to-face training of intermediaries (i.e., the extension service, NGO staff or farmers' associations) who are already working directly with farmers (Clarkson et al., 2019; Staub & Clarkson, 2021). However, the constraints imposed by COVID-19 required, in many circumstances, a transition from face-to-face to online training beyond these "intermediaries" who also had restrictions carrying out their work in the field. Young people (who are part of coffee families where parents still play a large role in coffee farming) are already actively using online platforms and apps for education and entertainment. These young farmers can not only influence their family farms but can share ideas and approaches with others. They may also be more likely to stay actively involved in coffee farming if they can find new ways of doing things, including engaging digitally.

During 2020 when COVID-19 prevented face-to-face training, young people became a bridge between farmers and intermediaries in facilitating PICSA implementation in the field. The trained young people worked with farmers through a series of PICSA activities using participatory tools. Activities included facilitating a) each farmer to consider their own context and resources, b) analysing historical climate information to explore local climatology, climate change and their implications, c) exploring the

suitability of different crops and varieties, d) identifying and evaluating crops, livestock and other livelihood options (including management practices) and e) the use of weather and climate information (forecasts, early warnings), in planning their production systems.

In Mexico and Central America, over four million people depend directly on coffee production for their livelihoods and coffee has been produced for generations (Tucker et al., 2010). Currently, Honduras is the largest coffee producer in Central America and the fifth in the world, with about 120,000 coffee-growing families, where 90% of them are small-scale. Coffee production is distributed in six large regions: Agalta, Opalaca, Copan, Montecillos, Comayagua and El Paraíso, generating around one million jobs between the harvesting, processing and transportation of coffee (Perfect daily grind, 2020).

However, climate variability and change puts coffee production and farmers' livelihoods at risk (Bunn et al., 2018). In early 2019, Central America recorded its fifth consecutive drought year, with 2.2 million people having suffered severe crop losses in previous years (Depsky & Pons, 2020). Also, hurricanes Mitch (1998), Stan (2005), Eta & Iota (2020) have had significant impacts on coffee and staple grain farmer livelihoods, with strong winds and excessive rainfall resulting in significant crop damage and losses (CARE, 2020; Cruz-Bello et al., 2011; Harvey et al., 2018).

The findings presented in this info note are preliminary and based on the reports and observations of the young facilitators. However, this first online PICSA training was the starting point for planning the next steps for working with the coffee sector in Honduras.

PICSA – Online training

The objectives of the online training were:

- To train young people in participatory tools, including resource allocation maps, agro-climatic calendars, and option matrices.
- To present the sources of available climate information– climatology, time series and the climate forecasts.
- To enable the young participants to implement elements of the PICSA process with their families or close neighbours (small groups considering the COVID -19 restrictions).
- For the young people to produce a local agro-climatic bulletin with the most relevant information resulting from the PICSA implementation process.

The PICSA training is typically a five-day, face-to-face, process. However, this online pilot was developed for two days (6 hours each) on a Zoom platform. IHCAFE ensured that these young people had the necessary tools i.e., devices (cell phone, tablet, or computer), internet connection to access the training and prior training on how to use the platform.

The 45 young people who participated in the training (73% men, 27% women) were between 20-30 years old. They are part of the IHCAFE community leaders, taking the University program in Sustainable Coffee Growing & Climate Change for two years through the Technological University of Honduras - UTH. Given IHCAFE's interest in PICSA, the opportunity was presented to include this approach as a pilot in the training curriculum for these young people, who belong to different coffee growing regions of Honduras (Figure 1).

Figure 1. *Departments in Honduras (blue circle) to which the 45 young participants of the PICSA training belong.*

Because it was the first pilot and time was limited, the training for the 45 young people was developed by a facilitator (first author of the info note), and not all of the elements of PICSA were included. The two days covered the following:

1) What does the farmer currently do? How to construct the resource allocation map (for their current situation and for their 'dream farm' i.e. what they would like their farm to become) and the agroclimatic calendar
2) What is the local climatology, what is the variability and how is the climate changing? Farmers' perceptions and historical records (understanding and interpreting)
3) What are the options for the farmers*?* How to construct a crop practices options matrix
4) What are the opportunities and risks? Climate forecast, identify and select possible crop responses to the forecast
5) Developing an agroclimatic bulletin. Using their experiences during the PICSA implementation process, the participants prepare a local agroclimatic bulletin.

The facilitator explained the PICSA elements over the two days and gave examples of implementations in other countries (Giraldo Mendez et al., 2019; Ortega Fernández et al., 2018). The facilitator developed the training with all 45 participants in 6 hour blocks each day. The first day included a one-hour activity where participants worked on

their own to develop the resource allocation maps (point 1) and the second day, a two hour activity to develop and present in plenary a matrix of coffee practices (point 3).

Each participant, by hand (on a sheet of paper) or digitally (on computer), developed the PICSA activities and then presented them by sharing their screen so that the other participants could see, engage, and discuss. Where they were created by hand, the participants took a photo and shared it (Figure 2).

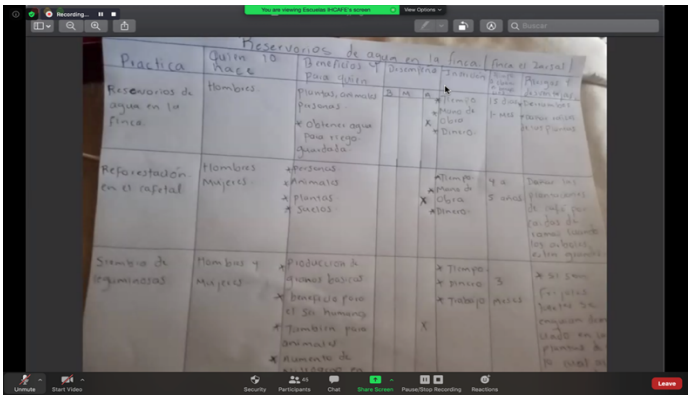

Figure 2. A young participant is sharing the crop practices options matrix in plenary with the whole group.

Below is a testimonial from a young participant:

"I realized in the exercise to identify the crop practices to achieve my 'dream farm', it can be a family activity. Men have worked for generations at the forefront of coffee, but in the exercise ideas to make changes in cultivation practices have been brought by women, and there is greater openness to adopt new technologies. The woman also teaches the children who contribute to good agricultural practices in the future."

Young participant

The facilitator always encouraged young people to be active participants in exploring learning as part of the PICSA training, as the online process can turn into passive learning, where they only receive information.

➔ REFLECTIONS FROM THE FIRST ONLINE TRAINING

The main reflections regarding the PICSA online training of young farmers are **a)** alliances with academic institutions, the private sector and the government in ensuring the digital inclusion of these young farmers is a key factor for agricultural development, **b)** the networks created (WhatsApp group) resulted in the young people being more informed and better connected which helped them to operate in the field under the challenges brought by the pandemic, **c)** there were some connectivity constraints, but the training can be recorded for those with connection problems and those who want to delve into the topics further. That means all participants have access to the same materials, in the same way, at any time and place, which also reduces costs, **d)** additional activities in the training are recommended to better facilitate the online process and to engage young people's interest, such as questionnaires, games, discussion rooms (e.g. exchange of PICSA experiences with other young people in other countries), or interactive boards, and **e)** online training processes require very good facilitation skills, so it is recommended facilitators undertake a short course or seek expert advice before running online training.

This experience and information gained from the online PICSA training helped us to plan in more detail the next steps for the implementation of PICSA in the coffee areas in Honduras. It proved to be very useful as part of the scoping and design that is normally conducted ahead of using PICSA in a country or context for the first time.

PICSA – Field implementation

Given that the first online training was limited in terms of time and depth regarding some elements of PICSA compared with a face-to-face training, our expectations that young people would implement PICSA were low. However, the results were surprising. Of the 45 participants, 53% voluntarily chose to implement PICSA in the field as part of their learning process as technicians in Sustainable Coffee Growing & Climate Change.

Table 1 shows the departments and municipalities to which the young people belong who implemented PICSA with their families and neighbours.

Table 1. PICSA field implementation municipalities

Department	Municipalities
Comayagua	Comayagua, Ojo de Agua
Copán	Corquín, Dolores, Concepción
Intibucá	Masaguara, San Juan, San Francisco de Opalaca
La Paz	San José, San Pedro de Tutule, Santiago de Puringla
Lempira	San Rafael, La Iguala
Ocotepeque	Nuevo Ocotepeque, Lucerna, Ilama
Santa Bárbara	Ceguaca, Concepción del Sur, San Francisco de Ojuera

The young people, now in a facilitator role, brought together their relatives/neighbours. and worked with them individually, or in groups (maximum four people), to carry out PICSA activities. In the **first activity** in PICSA (Figure 3a), the farmers drew the resource allocation maps, including i) the current resources of the farm (e.g., crops, livestock, water sources), and ii) the "dream farm", which contains the objectives, goals, and plans that each farmer has for their farm in 3 years.

"Drawing the maps allowed farmers and their families to plan their activities, which are aimed at improving the coffee farm and how to teach our farmers why it is so important to allocate resources."

Young participant

Figure 4. *PICSA activities in the field with farmers. Source: Young facilitators*

Then, in the **second activity**, the farmers drew the agroclimatic calendar (Figure 3b and 3c). With their perception of the climate in each month of the year, farmers identified the specific activities carried out in their main crops and how these have been affected by the weather and climate. In general, the agroclimatic calendar was developed for coffee and, in some cases, included other main crops such as beans and maize.

The main activities mentioned by coffee farmers were cutting, cleaning the farm, liming, pruning, and thinning, pulp irrigation, replanting coffee trees, fertilising and sampling of rust.

Changes in the rainy season onset, prolonged droughts, midsummer drought, known as la canícula or veranillo, hurricanes, and cold fronts were the events mentioned by the farmers in the agroclimatic calendar that most affected their crop activities.

"Previously, sowing coffee was easier since there were more rains, and the soils were more fertile. Nowadays, with droughts, coffee is affected because more fertiliser is needed, and productions are lower."
Coffee farmer in Intibucá

Usually, in face-to-face PICSA, either members of the Met Service attend the training and present the historical information or participants visit the National Meteorological Service. In the **third activity**, the young people analysed the nearest meteorological station's information and compared it with the farmers' perceptions, reflected in their agroclimatic calendar. An aim of this activity is that farmers begin to have confidence in the use of meteorological information collected from meteorological stations to use it in their decision-making processes. The young facilitators processed and illustrated the IHCAFE and Met Service (Figure 4) meteorological stations' historical information. Because the online training included participants from a wide range of locations significant time is required to source the weather information, access the data, and produce and analyse time series graphs.

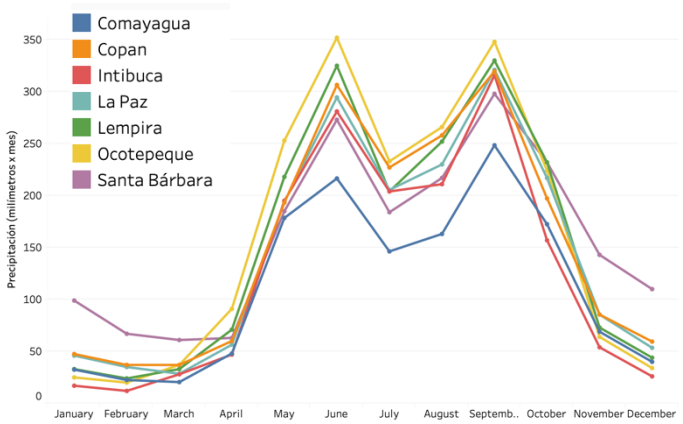

Figure 3. *Monthly precipitation (climatology) for the departments where PICSA was implemented. Source: CENAOS- COPECO*

In the **fourth activity,** the farmers created the crop practices matrix to consider options that can help them to achieve their “dream farm” and to respond to the climate challenges identified in the agroclimatic calendar. The matrix includes identifying and considering the name of the practice (e.g., agroforestry systems); who participates in the implementation of the practice (e.g., the family); the potential benefits of the practice; the performance of the practice under precipitation scenarios (high, medium, low); investment requirements of the practice (time, workforce and knowledge); return time (length of time after implementation before benefits of the practice occur); and risks and disadvantages. Figure 5 summarizes the practices prioritized by farmers to achieve their dream farm in each department (lines in colours).

Figure 5. *Practices prioritized by farmers in the development of the options matrix for each department (lines in colours). The grey circles correspond to practices focused on coffee and the green circles to broader practices on their farms.*

For example, farmers in Ocotepeque, Santa Bárbara and Intibucá mentioned as part of diversification, establishing agroforestry systems to regulate the coffee temperature to increase the resilience of farms and guarantee food security. In the practice related to sowing, Copan farmers mentioned that seed viability tests (germination) should be carried out and a pre-germination treatment applied before sowing to reduce losses. Also, the seedbed should be established considering the rainy season.

In the **fifth activity**, the young people released the climate forecast given by the National Meteorological Service - CENAOS / COPECO for each region for July to September. The forecast is also available through the Participatory Agroclimatic Committees coordinated by the Secretariat of Agriculture and Livestock - SAG[1]. With the climate forecast, the young people and the farmers identified and selected possible crop responses.

Finally, the young people created a **local agroclimatic bulletin** that allows the coffee farmer to have weather and climate information to hand to make decisions on their coffee farms. The bulletin also summarises the practices prioritised by farmers (Figure 5) to address climate variability and change.

"I am a student and make an agroclimatic bulletin with the help of my family is very important for me; my family is always in the field, and they have already worked the land for generations. With that information already in order, the farmer can decide what activities to carry out on the coffee farm. In this way, the farmer is saving time and money and can cope with climate change and think about his dream farm."
Young participant

Conclusions and next steps

Creating opportunities for young coffee farmers in Participatory Integrated Climate Services for Agriculture has the potential to help rejuvenate the coffee sector in Honduras through increasing youth employment and rural incomes and making agriculture a viable career for the future generations.

The opportunity to train young people in PICSA was stimulated by IHCAFE's interest in providing climate services and encouraging joint work between young community leaders and the extension service. The results presented here are from a short pilot exercise. Not all of the PICSA steps were covered but the pilot revealed valuable insights and findings regarding the potential of online training given the COVID-19 restrictions.

PICSA implementation results showed that these young people are generators of change in their communities. Through digital inclusion, the young community leaders were able to use participatory tools and locally specific climate information to support coffee farmers' decision-making. However, a fuller PICSA online training is required to cover all the elements of PICSA and to build the capacity of the young trainers to face all of the challenges they may encounter in implementation. We recommend two online training sessions in PICSA before its implementation in the field. During implementation, a WhatsApp group can be opened with the young people to monitor the process and for them to support each other and provide confidence / help to resolve any issues. After implementing in the field, the process should include sessions focussing on lessons learned and feedback that can improve the process. The above reflects the importance of the PICSA expert facilitator in the entire process, both online and face-to-face.

Therefore, the next steps in the work described here are i) to provide a feedback and lessons learned session with the young people who implemented the PISCA process in the field, ii) to provide a second online training to cover the missing elements of PICSA and reinforce some aspects (these sessions would include National Meteorological Service and the IHCAFE extension service), iii) to support these young people through a second PICSA implementation in the field in July-August; including more farmers and the whole PICSA process, iv) finally, to evaluate the overall process.

[1] http://bit.ly/SAG_MTA

PICSA Website: https://research.reading.ac.uk/picsa/

Further reading

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